

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 17 January 2000 (17.01.00)	
<b>International application No.</b> PCT/US99/07737	<b>Applicant's or agent's file reference</b> 960067.WP
<b>International filing date (day/month/year)</b> 14 April 1999 (14.04.99)	<b>Priority date (day/month/year)</b> 14 April 1998 (14.04.98)
<b>Applicant</b> LUSK, Paul, D. et al	

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

27 October 1999 (27.10.99)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. Mafla

Telephone No.: (41-22) 338.83.38

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

REC'D 25 JUL 2000

PCT

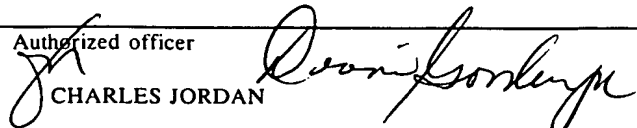
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 960067.WP	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/07737	International filing date (day/month/year) 14 APRIL 1999	Priority date (day/month/year) 14 APRIL 1998
International Patent Classification (IPC) or national classification and IPC IPC(6): CO6B 25/20 and US Cl.: 149/100		
Applicant ALLIANT TECHSYSTEMS INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 0 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  27 OCTOBER 1999	Date of completion of this report  26 JUNE 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231  Facsimile No. (703) 305-3230	Authorized officer  CHARLES JORDAN Telephone No. (703) 306-5751

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/07737

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
pages 1-19, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the claims:  
pages 20-21, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the drawings:  
pages 1-2, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of
- ☒ the sequence listing part of the description:  
pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig. NONE

5. ☒ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/07737

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims	<u>2,5,6,8-16</u>	YES
	Claims	<u>1,3,4,7,17</u>	NO
Inventive Step (IS)	Claims	<u>10-16</u>	YES
	Claims	<u>1-9,17</u>	NO
Industrial Applicability (IA)	Claims	<u>1-17</u>	YES
	Claims	<u>NONE</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1,3,4,7, and 17 lack novelty under PCT Article 33(2) as being anticipated by Schumacher.

Schumacher discloses a single-base propellant comprising nitrocellulose, ethyl centralite, dibutylphthalate, and potassium sulfate. The plasticizer is an adipate.

Claims 2,5,6,8,9 lack an inventive step under PCT Article 33(3) as being obvious over Schumacher in view of Goleniewski et al. Schumacher discloses a single-base propellant comprising nitrocellulose, ethyl centralite, dibutylphthalate, and potassium sulfate. The plasticizer is an adipate. However, Schumacher does not disclose the specific plasticizer. Goleniewski teaches the use of acetyl triethyl citrate and acetyl tri-n-butyl citrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plasticizers of Goleniewski et al since they would function the same as the adipate plasticizers of Schumacher.

Claims 10-16 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest a DNT and DBP-free propellant.

----- NEW CITATIONS -----

US 5,218,166 A (SCHUMACHER) 8 JUNE 1993, see column 4, lines 26-40; column 5, lines 56-60; column 8, lines 1-22

US 5,348,596 A (GOLENIOWSKI et al) 20 SEPTEMBER 1994, see column 2, lines 28-32

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/07737

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**I. BASIS OF REPORT:**

5. (Some) amendments are considered to go beyond the disclosure as filed:  
NONE

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WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>C06B</b>	<b>A2</b>	(11) International Publication Number: <b>WO 99/59939</b>
		(43) International Publication Date: 25 November 1999 (25.11.99)
<p>(21) International Application Number: PCT/US99/07737</p> <p>(22) International Filing Date: 14 April 1999 (14.04.99)</p> <p>(30) Priority Data: 60/081,684 14 April 1998 (14.04.98) US</p> <p>(71) Applicant (for all designated States except US): ALLIANT TECHSYSTEMS INC. [US/US]; MN11-2216, 600 Second Street N.E., Hopkins, MN 55343-8384 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): LUSK, Paul, D. [-/US]; 1008 Custic Street, Radford, VA 24141 (US). TOGGWEILER, Richard, O. [-/US]; 4828 Glenbrook Drive, Roanoke, VA 24018 (US). WORRELL, William, J., Jr. [-/US]; Route 1, Box 424E, Draper, VA 24324 (US). MOY, Sam, M. [-/US]; 69 Glassboro Road, Parsippany, NJ 07054 (US). LOPEZ, Lucas, R. [-/US]; 1221 14th Street, North Bergen, NJ 07047 (US). HUI, Philip, Y. [-/US]; 86 Belleville Road, Parsippany, NJ 07054 (US). RUTKOWSKI, James, J. [-/US]; 15 Meadow Lane, Hackensack, NJ 07840 (US). PREZELESKI, Joseph [-/US]; P.O. Box 161, Jermyn, PA 18433 (US). CIRINCIONE, Richard [-/US]; 26 Eaglesmere Circle, East Stroudsburg, PA 18301</p>		<p>(US). ALTIZER, Eva, Marie [-/US]; 413 Calhoun Street, Radford, VA 24141 (US).</p> <p>(74) Agent: NIKOLAI, MERSEREAU &amp; DIETZ, P.A.; 820 International Centre, 900 Second Avenue South, Minneapolis, MN 55402-3325 (US).</p> <p>(81) Designated States: AU, BR, CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i></p>
(54) Title: DINITROTOLUENE (DNT)-FREE SINGLE BASE PROPELLANT		
<p>(57) Abstract</p> <p>A plasticizer material suitable for a DNT-free single base propellant formulation containing an amount of material selected from citrate and adipate compounds.</p>		

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>960067.WP</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 99/ 07737</b>	International filing date (day/month/year) <b>14/04/1999</b>	(Earliest) Priority Date (day/month/year) <b>14/04/1998</b>
Applicant <b>ALLIANT TECHSYSTEMS INC. et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the International search was carried out on the basis of the International application in the language in which it was filed, unless otherwise indicated under this item.

☐ the International search was carried out on the basis of a translation of the International application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the International application, the International search was carried out on the basis of the sequence listing:

☐ contained in the International application in written form.

☐ filed together with the International application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the International application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

## 4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

## 6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/07737

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C06B25/20 C08K5/11 C08L1/18

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C06B C08K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 295 01 100 U (HAGEDORN AG) 30 May 1996 (1996-05-30) page 2 -page 3	1-3
X	GB 1 093 544 A (E.I. DU PONT DE NEMOURS AND COMPANY) page 2, line 6 - line 28 page 3, line 47 - line 58	1-3, 14
X	DE 10 99 418 B (OLIN MATHIESON CHEMICAL CORPORATION)	1, 4
Y	column 4, line 6 - line 28; claims column 3, line 39 - line 44	5-17
X	DE 12 03 652 B (WOLFF & CO., AKTIENGESELLSCHAFT)	4
Y	column 1, line 43 - line 21	5-17
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

29 November 1999

Date of mailing of the international search report

06/12/1999

Name and mailing address of the ISA

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Authorized officer

Schut, R



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/07737

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 218 166 A (J.B. SCHUMACHER) 8 June 1993 (1993-06-08) column 7, line 63 -column 8, line 22 column 4, line 11 - line 61	5-17
A	US 3 734 793 A (J.S. LORY ET AL.) 22 May 1973 (1973-05-22) column 2, line 8 - line 59	1-17
A	US 2 027 114 A (F. OLSEN ET AL.) 7 January 1936 (1936-01-07) page 3, left-hand column, line 7 - line 15 page 6, left-hand column, line 10 - line 30	1-17
A	DE 567 878 C (E.I. DU PONT DE NEMOURS AND CO.,) the whole document	1-17

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US 99/07737

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29501100 U	30-05-1996	NONE	
GB 1093544 A		NONE	
DE 1099418 B		NONE	
DE 1203652 B		NONE	
US 5218166 A	08-06-1993	NONE	
US 3734793 A	22-05-1973	NONE	
US 2027114 A	07-01-1936	NONE	
DE 567878 C		NONE	